

What is claimed is:

1. A method of liquefying snow and/or ice, said method comprising:
  - a) providing a melting reservoir for receiving snow and/or ice and maintaining a water bath in said melting reservoir;
  - b) providing a rotor-stator device within said melting reservoir, said rotor-stator device having a rotor with rotor discharge apertures and a stator with stator apertures,
  - c) placing snow and/or ice in said melting reservoir; and
  - d) rotating a rotor of said rotor-stator device at a speed high enough to force water and said snow and/or ice through said rotor discharge apertures and through said stator apertures.
2. The method of claim 1, further comprising the step of:
  - e) adding a melting aid to said water bath.
3. The method of claim 1, further comprising the step of:
  - f) circulating water from said melting reservoir through a heat-exchanger to warm said water from heat generated by auxiliary systems and feeding said warmed water back into said melting reservoir.
4. The method of claim 3 further comprising the step of spraying said warmed water onto said snow and/or ice in said melting reservoir.
5. The method of claim 2 further comprising the step of discharging melting-aid treated water through a distribution spray system onto pavement.
6. A system for liquefying snow and/or ice, said system comprising:  
snow-liquefaction apparatus that includes a melting reservoir for receiving snow and/or ice to be melted, a rotor-stator device for liquefying said snow and/or ice, and a

discharge for discharging liquefied snow and/or ice from said snow-liquefying apparatus;

    a water bath in said melting reservoir;

    a drive engine that is an internal combustion engine, said drive engine for driving said rotor-stator device; and

    a circulating heat recovery system that collects heat from ancillary systems, wherein water from said water bath is circulated through said circulating heat recovery system and reintroduced into said water bath.

7. The system of claim 6, wherein said discharge includes an overflow control that is adapted to prevent overfilling of a snow-water mix within said melting reservoir by discharging water from said melting reservoir when said snow-water mix rises above a pre-determined level.

8. The system of claim 7, wherein said overflow control includes a vertical weir slot in an overflow control area for discharging water from said melting reservoir, said weir slot having an upper end that is wider than a lower end such that, as a water level rises in said overflow control area, a rate of discharge of said water increases.

9. The system of claim 6, further comprising a debris-collection assembly that is mounted in said melting reservoir above said rotor-stator device so as to prevent debris entrained in said snow and/or ice from contacting said rotor-stator device.

10. The system of claim 9, wherein said debris-collection assembly includes an inclined screen and a debris collection chamber, wherein said debris is collected on said screen and moves toward said debris collection chamber.

11. The system of claim 10, wherein said debris collection chamber has an access and is cleanable external to said melting reservoir.

12. The system of claim 6, further comprising a means for drawing said snow and/or ice into said rotor-stator device.

13. The system of claim 12, wherein said means is a propeller assembly.

14. The system of claim 6, further comprising a prime mover, wherein said snow-liquefaction apparatus is adapted to be attachable to said prime mover so as to be towable.

15. The system of claim 6, further comprising a conveyance means for transporting snow from a ground level into said melting reservoir.

16. The system of claim 6, wherein said snow-liquefaction apparatus is embedded in the ground such that an upper end of said melting reservoir is approximately at ground level to enable use of conventional snow-moving equipment to push snow into said melting reservoir.

17. The system of claim 6, further comprising a pavement pre-treatment system that includes a distribution spray bar that is connected to said discharge, wherein melt-aid treated water from said water bath is discharged through said distribution spray bar onto pavement.

18. A system for liquefying snow and/or ice, said system comprising:

    snow-liquefaction apparatus that includes a melting reservoir for receiving snow and/or ice to be melted, a rotor-stator device for liquefying said snow and/or ice, and a discharge for discharging liquefied snow and/or ice from said snow-liquefying apparatus;

    a water bath in said melting reservoir; and

    an electric motor to drive said rotor-stator device.

19. The system of claim 18, wherein said discharge includes an overflow control that is adapted to prevent overfilling of a snow-water mix within said melting reservoir by discharging water from said melting reservoir when said snow-water mix rises above a pre-determined level.
20. The system of claim 19, wherein said overflow control includes a vertical weir slot in an overflow control area for discharging water from said melting reservoir, said weir slot having an upper end that is wider than a lower end such that, as a water level rises in said overflow control area, a rate of discharge of said water increases.
21. The system of claim 20, further comprising a debris-collection assembly that is mounted in said melting reservoir above said rotor-stator device so as to prevent debris entrained in said snow and/or ice from contacting said rotor-stator device.
22. The system of claim 21, wherein said debris-collection assembly includes an inclined screen and a debris collection chamber, wherein said debris is collected on said screen and moves toward said debris collection chamber.
23. The system of claim 22, wherein said debris collection chamber has an access and is cleanable external to said melting reservoir.
24. The system of claim 18, further comprising a means for drawing said snow and/or ice into said rotor-stator device.
25. The system of claim 24, wherein said means is a propeller assembly.
26. The system of claim 18, further comprising a prime mover, wherein said snow-liquefaction apparatus is adapted to be attachable to said prime mover so as to be towable.
27. The system of claim 18, further comprising a conveyance means for transporting snow from a ground level into said melting reservoir.

28. The system of claim 18, wherein said snow-liquefaction apparatus is embedded in the ground such that an upper end of said melting reservoir is approximately at ground level to enable use of conventional snow-moving equipment to push snow into said melting reservoir.

29. The system of claim 18, further comprising a pavement pre-treatment system that includes a distribution spray bar that is connected to said discharge, wherein melt-aid treated water from said water bath is discharged through said distribution spray bar onto pavement.